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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/041,001	12/28/2001	Arthur L. Lanni	ABMS-0153/B000360	4719

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EXAMINER	
DONOVAN, LINCOLN D	

ART UNIT	PAPER NUMBER
2832	

DATE MAILED: 05/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/041,001	LANNI ET AL.	
	Examiner	Art Unit	
	Lincoln Donovan	2832	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *11 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.

4a) Of the above claim(s) *2,3,5,16,17 and 29* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4,6-15 and 18-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Newly submitted claim 29 directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: the claimed gap structure is drawn to an embodiment not originally presented or considered.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claim 29 is withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leiber [US 4,711,266] in view of Tsunefuji [US 4,321,570].

Regarding claims 1, 4, 6, 8-12 and 14-15, Leiber discloses an actuator assembly [figure 1] comprising:

- an annular housing [3] comprising a body and an extension member having an annular inner surface;
- a solenoid coil [2] disposed coaxially within the housing;
- a shaft [5] disposed coaxially with the solenoid coil; and

- an annular armature [4],having an outer surface, coupled to the shaft and movable between a first position proximate the solenoid coil and a second position distal of the solenoid coil wherein in the second position the armature and the body of the housing define a first gap therebetween, the extension member extending in an axial direction towards the armature and beyond the solenoid coil such that the inner surface of the extension member and the outer surface of the armature define a second gap therebetween, the width of the second gap being less than the width of the first gap.

Leiber disclose the instant claimed invention except for a permanent magnet disposed in the housing facing the armature with the permanent magnet being on opposite sides of the first gap.

Tsunefuji discloses an electromagnetic actuator [figure 3] having an armature [3] and yoke structure [11a, 11b, 11b'] and a permanent magnet [12] disposed facing the armature with the permanent magnet being on opposite sides in a gap between the yoke and armature.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a permanent magnet disposed in the housing facing the armature with the permanent magnet being on opposite sides of the first gap of Leiber, as suggested by Tsunefuji, for the purpose of providing latching and/or reducing necessary activation force.

Regarding claim 7, Leiber discloses the housing not enclosing the armature [figure 1].

Regarding claim 13, Leiber discloses the armature disposed substantially coaxially with the solenoid coil [figure 1].

Regarding claim 15, Leiber, as modified, discloses the instant claimed invention except for the second gap width between the extension member and the armature being substantially constant.

It would have been obvious to a person having ordinary skill in the art at the time invention was made that during the period in which the armature is within the confines of the extension that the gap width between the extension member and the armature being substantially constant. The specific size of the extension and armature displacement would have been an obvious design consideration based on the specific application intended for the device.

Claims 18, 26 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Leiber, as modified, as applied to claim 6 above, and further in view of Everett [US 4,664,136].

Regarding claim 18, Leiber, as modified, disclose the instant claimed invention except for: the shaft including a shaft collar for limiting shaft travel, a core member located in the housing and a clamp plate disposed on the housing wherein the extension member extends in an axial direction towards the armature and beyond the clamp plate.

Everett discloses an actuator [figure 2] including a housing [34], a coil [44] and a shaft [64], supported by an armature [78], having a collar [76] for limiting shaft travel.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to include a collar on the shaft of Leiber, as modified, as suggested by Everett, for the purpose of preventing shaft overtravel.

Regarding claim 26, Everett further discloses a core member [46] disposed in the housing.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to include a core in the housing of Leiber, as modified, as suggested by Everett, for the purpose of improving flux control and/or strength.

Regarding claim 28, Everett further discloses the housing including a clamp plate [60].

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use a clamp plate in the housing of Leiber, as modified, as suggested by Everett, for the purpose of supporting the coil within the housing.

Claims 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Leiber, as modified, as applied to claim 6 above, and further in view of Franz [US 3,545,472].

Regarding claims 19-20, Leiber, as modified, disclose the instant claimed invention except for the actuator shaft being threaded and the armature being secured to the shaft via a nut.

Franz discloses an actuator having a threaded shaft [64] including an armature [67] secured to the shaft via a nut.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use the threaded shaft design of Franz for the shaft of Leiber, as modified, for the purpose of securing the armature to the shaft.

Claims 21-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Leiber, as modified, as applied to claim 6 above, and further in view of Chase, Jr. [US 3,022,450].

Regarding claims 21-23, Leiber, as modified, disclose the instant claimed invention except for: the armature having an annular recess to receive a biasing spring and an annular permanent magnet mounted within the housing.

Chase, Jr. discloses a an actuator [figure 1] including an armature [14] with an annular recess for receiving a biasing spring [32].

It would have been obvious to a person having ordinary skill in the art at the time invention was made to use provide a biasing spring received by a recess in the armature of Leiber, as modified, as suggested by Chase, Jr., for the purpose of mounting the spring and biasing the armature.

The particular biasing state would have been an obvious design consideration based on the desired biasing state.

Chase, Jr. further discloses an annular permanent magnet [38] mounted within the actuator.

It would have been obvious to a person having ordinary skill in the art at the time invention was made to include a permanent magnet in the actuator of Leiber, as modified, as suggested by Chase, Jr., for the purpose of latching the armature.

Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Leiber, as modified, as applied to claim 6 above, and further in view of Hattori et al. [US 6,125,803].

Leiber, as modified, disclose the instant claimed invention except for a bushing for the shaft.

Hattori et al. disclose an actuator having a shaft [28] mounted on a bearing [44].

It would have been obvious to a person having ordinary skill in the art at the time invention was made to include a bearing/bushing for the shaft of Leiber, as modified, as suggested by Hattori et al., for the purpose of reducing shaft wear.

Response to Arguments

Applicant's arguments with respect to claims 1, 4, 6-15 and 18-28 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lincoln Donovan whose telephone number is (571) 272-1988. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Elvin Enad can be reached on (571) 272-1990. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ldd

LINCOLN DONOVAN
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